REVISE
.wales

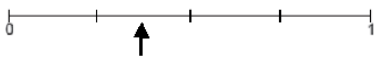
F2.04 — Fraction arithmetic & equivalence

Mark schemes for the F2.04 question pack

Spec 1.4.1, 1.4.2, 1.4.3, 1.4.4, 1.4.5, 1.4.6, 1.4.7 — Unit 2

SOLUTIONS · 2025 SPECIFICATION

Mark schemes for the 30 questions in the corresponding revise.wales question pack (58 marks total). Sources: legacy WJEC GCSE papers, WJEC SAM, and custom-authored mark schemes. Pack layout © revise.wales.

		• use appropriate terminology, units, etc.
11.(a) 3	B1	
11.(b) unlikely	B1	
11.(c) 	B1	Any indication of ¼ to ½ exclusive.

2.(c)	7 pints	B1	
3.(a)	−5 −1 1	B2	B2 for all three correct. B1 for one or two correct.
3.(b)	Correct plots. Straight line from (−4,−7) to (6,3)	P1 L1	FT 'their y-values at x = −2, 2 and 4'. 2 correct plots sufficient as they are told it's a straight line. Allow ±'½ a small square'. P0 if any incorrect plot. CAO no FT. Allow ±'1 small square'. Must be from (−4,−7) to (6,3) but allow 'extended' line. A correct line gains P1L1.
3.(c)	(−4,−7) (6,−7) (6,3) (−4,3) (In any order)	B2	B2 for all four correct. B1 for three correct. *Only award B1(not B2) if all four correct coordinates given for their extended line.* If L0 from a 'shortened correct line' then FT (for B2 or B1). If L0 from an incorrect line then FT (for B2 or B1) only if a quadrilateral has been **drawn using** 'their line' as a diagonal. SC1 for the correct square drawn but no (or incorrect) coordinates given

13.(a) Statement indicating that 0·3 is less than 0·5. OR Statement indicating that probability of selecting a blue ball should be greater than 0·5. OR Statement that refers to a proportion of the balls e.g. '(Only) 30% (of the balls) are blue', '(Only) 3/10(ths) (of the balls) are blue'.	E1	B0 for e.g. 'Fewer than half the balls are blue'. 'Should be higher', 'Would be above 0·3'. Allow correct interpretation of 0·3 e.g. '(Only) 30 out of 100 are blue', '(Only) 15 out of 50 are blue'. Accept any indication for 0·5, e.g. 'half', '½'.
13.(b) 0·7 or equivalent.	B1	B0 for incorrect notation; e.g. 7 out of 10.
13.(c) $\frac{0·3 \times 50}{15}$	M1 A1	If no marks gained, allow SC1 for sight of 15; e.g. 15/50, 15:35.

15. Attempt to display any 3 or 4 in a common format. e.g. all decimals or all as percentages or all with a common denominator or calculation using a common value.	M1	Method mark is for the attempt. e.g. attempt to show any three as 0·25, 0·2(0), 0·28, 0·26. OR 25(%), 20(%), 28(%), 26(%) OR 25/100, 20/100, 28/100, 26/100 OR Say, ¼×25=6·25,1/5×25=5,7/25×25=7,13/50×25=6·5
Three values accurate.	A1	
13/50 or equivalent AND all 4 correct.	A1	C.A.O. SC1 for a 13/50 if no marks gained

WJEC GCSE MATHEMATICS

AUTUMN 2019 MARK SCHEME

GCSE MATHEMATICS Unit 2: Foundation Tier		Mark	Comments
1.	72 150 52 59 168 158	B1 B1 B1 B1	
2.(a)	(44), 88, 132, 176, 220	B1	Ignore any additional multiples
2.(b)	33	B1	
3.	> < > <	B2	For all four correct. B1 for any three correct.
4.	(Perimeter of triangle = 14 + 14 + 14) = 42 (cm) (Length of side of square =) 42 ÷ 4 = 10.5 (cm)	 B1 M1 A1	 May be implied. F.T. 'their 42' provided ≠ 14
OCW	Organisation and Communication.	OC1	For OC1, candidates will be expected to: • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanation and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means.
	Accuracy of writing.	W1	For W1, candidates will be expected to: • show all their working • make few, if any, errors in spelling, punctuation and grammar • use correct mathematical form in their working • use appropriate terminology, units, etc
5.	0.1(0) 10% $\frac{2}{25}$ 0.08	B4	B1 for each correct response.
6.(a)	32.16	B1	Accept $32\frac{4}{25}$ and $\frac{804}{25}$. B0 for 804 ÷ 25.
6.(b)	0.4	B1	Accept $\frac{2}{5}$. B0 for 2 ÷ 5 or $\frac{1.6}{4}$
7.(a)	trapezium	B1	
7.(b)	cuboid	B1	
7.(c)	a reflex angle	B1	
7.(d)	parallelogram	B1	
8.(a)	Point R plotted correctly	B1	
8.(b)	(-3, 2)	B1	
9.	275	B2	B1 for sight of 301.

WJEC GCSE MATHEMATICS

AUTUMN 2020 MARK SCHEME

GCSE Mathematics Unit 1: Foundation Tier	Mark	Comments
1. (a) Angle of 35° drawn at A	B1	Accept 33° to 37° Point alone is not sufficient.
1.(b) Circle radius 7cm (diameter 14 cm)	B1	Accept radius 6.8 (cm) to 7.2 (cm)
2.(a) 5433	B1	
2.(b) 174	B1	
2.(c) 75	B1	
2.(d) 6 × 7 ÷ 2 = 21	M1 A1	If no marks, award SC1 for sight of 42.
3.(a) 600	B1	
3.(b) 4000	B1	
4.(a) D	B1	
4.(b) S	B1	
5.(a) 9	B1	
5.(b) ÷ –	B1	
6.(a) 53	B1	
6.(b) 125	B1	
7.(a) 70 (%)	B1	
7.(b) 6 sectors shaded	B1	
8. 1/3 × 180(°) OR 2/3 × 180(°) or equivalent 60(°) OR 120(°) (180 – 60 =) 120 (°) OR (180 – 120 =) 60 (°)	M1 A1 B1	 A1 for either 60(°) OR 120(°) FT 'their 60' or 'their 120'. Two angles which add to 180(°) will get this B1. If no marks award SC1 for one angle twice the size of the other.
Alternative Method *2x + x = 180 (°) or 3x = 180 (°)* *x = 60 (°)* *2x = 120 (°)*	 M1 A1 B1	 *FT 2 × 'their x' or 180 – 'their x'*
9.(a) 16g	B1	
9.(b) (y =) 9	B1	Accept embedded answers. Mark final answer.
9.(c) (w =) 30	B1	Accept embedded answers. Mark final answer.

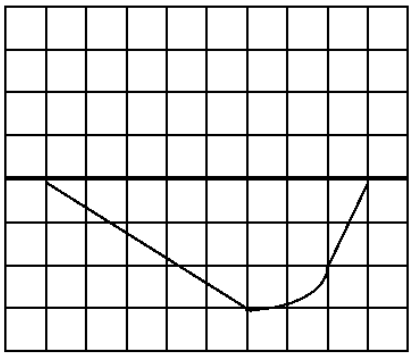
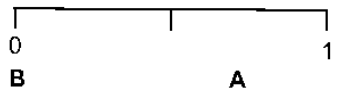
WJEC GCSE MATHEMATICS

AUTUMN 2020 MARK SCHEME

	GCSE MATHEMATICS **Unit 2: Foundation Tier**	**Mark**	**Comments**
1.	1.98 53 5.88 0.41	B1 B1 B1 B1	Ignore spurious units
2.(a)	3 700 000	B1	
2.(b)	9998	B1	
2.(c)	1, 3, 5 and 15	B2	Ignore repeats. Allow 1×15 and 3×5. B1 for 2 correct factors with none incorrect, OR for 3 or 4 correct with no more than one incorrect.
3.(a)	unlikely	B1	
3.(b)	20	B1	
3.(c)	Rolling a 1 on the dice	B1	
4.(a)		B2	B1 for two correct lines with one incorrect line OR for one correct line with no incorrect lines.
4.(b)	(an) equilateral (triangle)	B1	
5.(a)	102 OR 120	B1	
5.(b)	201 OR 210	B1	
6.	Three different even numbers with a sum of 24, not including 8. Possible solutions are 2, 4 (and) 18 2, 6 (and) 16 2, 10 (and) 12 4, 6 (and) 14	B3	In any order. Allow inclusion of negative numbers. If B3 not awarded, award B2 for three numbers which sum to 24 which satisfy two of the three conditions: • The numbers are different • The numbers are even • None of the numbers is 8 If B2 not awarded, award B1 for three numbers which sum to 24.
7.(a)	0.12 or $\frac{3}{25}$. or equivalent	B1	
7.(b)	$\frac{3}{5} \times 632$ or equivalent = 379.2	M1 A1	Award M1 A0 for 1896/5 or $379\frac{1}{5}$.
7.(c)	2.5	B1	
8.	$\frac{3}{10}$ 30 $\frac{9}{(20)}$ 0.45	B1 B1 B1 B1	Accept 30/100 for 3/10

WJEC GCSE MATHEMATICS

AUTUMN 2021 MARK SCHEME

Unit 1: Foundation Tier	Mark	Comments
1.(a) Ninety-five thousand and forty-eight	B1	
1.(b) 931	B1	
1.(c) 1250	B1	
1.(d) 208	B1	
1.(e) 1,2,3,6,9,18	B2	B1 for 4 or 5 correct and 0 incorrect B1 for 5 or 6 correct and 1 incorrect Ignore repeated numbers Accept products 1×18, 2×9, 3×6
2.(a) 94 (mm)	B1	Accept 92 to 96 (mm)
2.(b) 136(°)	B1	Accept 134 to 138 (°)
3.(a) 16	B1	
3.(b) ¾	B1	Mark final answer.
3.(c) 28	B1	
4. 	B2	B1 for correct longer straight line. B1 for correct curve AND shorter straight line. The lines must pass through the correct points.
5.(a) 4.3 x 1000 4300 (g)	M1 A1	
5.(b) 3 × 100 ÷ 6 50 (cm)	M1 A1	If M0 A0, award SC1 for sight of 300(cm) or 0.5(m).
6. 	B1 B1	A should be between 0.6 and 0.8 B should be at 0

8. (2.2 lb =) 1 (kg) 9.48 (kg)	B1 B2	 B1 for sight of 5.4 + 3.08 + 1 OR B1 for 5.4 + 3.08 + 'their 1' evaluated accurately OR B1 for an answer of 10.68 B3 for answer alone of 9·48 (kg)

7.(c) n – 4 (grapes)			B1	Mark final answer
8.	0.7 0.05	70(%)	B4	B1 for each correct response.
$\frac{1}{(20)}$				

2(a) one hundred and ninety-five thousand	B1	Do not accept • one hundred thousand and ninety-five thousand • 195 thousand
2(b) Caernarfon Castle	B1	Allow (+)0.2(%) as indication of Caernarfon Castle
2(c) 255949 + 260153 516 102	M1 A1	
2(d) 452 007 – 319 131 132 876	M1 A1	Allow 319 131 – 452 007 Allow -132 876

2(e) Yes and valid reason given e.g. 'Yes, because 455 428 is nearly 500 000' 'Yes, because if you round up 455 428 to the nearest hundred thousand it is 500 000' 'Yes, as 455 428 is closer to half a million than 400 000' 'Yes, because rounding to the nearest 100 000 would give you half a million'	E1	Allow e.g. 'Yes, because they had over 450 000' 'Yes, as only about 50 000 away from half a million' 'Yes, because 455 428 is nearly half a million' 'Yes, as you would round up to the nearest 50 000' 'Yes, as half a million is 500 000' 'No because it is nearly 45 000 short' 'No as it was only 455 428 so that's not quite half a million' 'No, because it is closer to 450 000' 'No because it is 460 000' 'No, because it is about 50 000 below' 'No, because it is just over 450 000' 'No, because the number is below 500 000 so it isn't half a million' 'No, because half a million is 500 000 but the number is 455 428' 'No because it would be in the 500 000 so he is wrong because 455 428 is less than half a million' Do not accept e.g. 'Yes, because 455 428 is about half a million' – this is the statement given 'No, because it's only 455 428' 'No because 455 428 isn't close to half a million as it is in the 4s' 'No, because they got 455 428'
2(f) Evidence of counting squares **inside** shape Answer in range 14 to 20 Correct evaluation of 'their area' × 4 and manager correct Or 48 ÷ 4 = 12 and manager correct	M1 A1 E1	 FT if M1 awarded for a correct evaluation of 'their area' × 4 and conclusion made consistent with their answer OR 'their area' is in the range 13 to 22 with 'their area' × 4 correct and manager correct
Alternative method *Evidence of splitting each square into 4* *Answer in range 56 to 80* *Correct evaluation (conclusion) of the area with manager correct*	*M1* *A1* *E1*	*Or for counting up in 4s up to at least 20* *Must not come from incorrect work* *FT if M1 awarded with conclusion made consistent for 'their area'* *OR* *'their area' is in the range 52 to 88 with correct conclusion*

3(a) **Use** of 1 million as 1 000 000	B1	May be seen at any stage of working or implied by a correct answer Accept from sight of 2.2 million written as 2 200 000 Allow as implied from one of the following: • sight of an appropriate stage of working, e.g. 1% as 22 000 or 10% as 220 000 or 50% as 1 100 000 • an answer of 40 000 provided not from 0.2 × 2 million
0.02 × 2.2 (× 1 000 000) or (1 000 000 ×) 2.2 ÷ 50 or equivalent	M1	The method must be for the intention of finding 2% of 2.2 million, not any other percentage May be implied, from a full method, from sight of • 0.02 × 'digits 22 with place value error' • when working not shown, only non-zero digits of 44 in their answers Award M0 for 1.02 × 2.2 or 0.98 × 2.2 or 0.2 × 2.2
(£) 44 000 or (£) 44,000	A1	CAO. Answer space takes precedence Do not accept (£)0.044 (million) or 44.000 (A0) unless 44000 seen in working (A1)

3(b)(i) $\frac{115}{360}$	B1	
3(b)(ii) Gold 20° ±2°	B1	Check the diagram
$1800 \times \frac{20\ (\pm 2)}{360}$ or $5 \times (20\ (\pm 2))$ or equivalent	M1	Also implies previous B1 FT for any value used for '20' provided ≠180° and < 360°) for M1 only (including use of 160°)
100 (gold medals)	A1	A correct answer from using 20°±2° in the inclusive range 90 to 110 (gold medals), not from premature approximation (20/360 = 0.05, then 0.05 × 1800 = 90 B1 M1 A0)

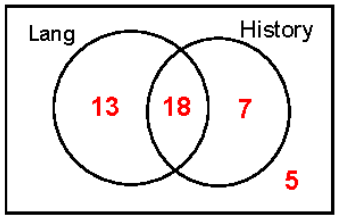
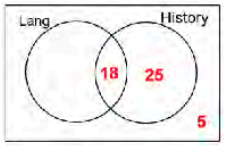
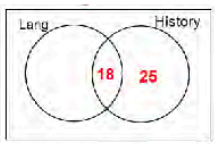
6(a) (Direct^2 =) $200^2 + 350^2$ Direct^2 = 162500 or (Direct =) √162500	M1 A1	
(Direct =) 403(.11... m) or 50√65 (m) or √162500 (m)	A1	FT from M1 for the correctly evaluated square root of 'their 162500' provided 'their answer' > 350 (m) May be implied in further working Mark final answer or the answer they go on to use, but then FT
(Extra distance =) 200 + 350 – 403(.1...) or 200 + 350 – 50√65 or 200 + 350 – √162500	M1	FT 'their derived 403(.11…)' > 350 and from an attempt to use Pythagoras' Theorem
146.8(87....m) or 146.9(m) or 147(m)	A1	

6(b)(i) Selects or unambiguously implies 'No' with a reason, e.g. 'the median is in group >200m to 1000m (and he lives 200m away)', 'median is more than 200m away (but Ronnie is 200m away)'	E1	Needs to compare 200(m) with median >200(m) The 200(m) can be implied from selecting 'No' Ignore additional spurious statements Allow 'No' with a reason, e.g. 'Ronnie's distance is in the first group, the median is in the second group' 'Ronnie only travels 200m which is less than the median (distance)' 'because the median distance travelled is between 200m and 1000m' 'Ronnie doesn't travel the distance of the 17.5(th) person' 'Ronnie doesn't travel the distance of the 17(th) (or 18th) person' 'the median 17.5(th)' 'the median 17(th) (or 18(th))' 'he only walks 200m when the (median) distance is higher' 'he only walks 200m which is less than the median' 'can't estimate exact number from the group 200< d ≤ 1000' 'the median **could** be 880' '9 less than half of 35' '26 students walk further than him' Do not accept 'No' with a reason e.g. 'Ronnie's distance is in the first group' 'the median **is** 250m'
6(b)(ii) Midpoints 150, 600, 2000, 5000 150×9 + 600×10 + 2000×15 + 5000×1 (= 1350 + 6000 + 30000 + 5000 = 42350 m) ÷ 35 1210 (m)	B1 M1 m1 A1	Check the table Sight of 7750 implies correct midpoints FT 'their midpoints' provided at least 3 are within or at the bounds of the appropriate groups Answer space takes precedence
6(c) (140 ÷ 7 =) 20 or 140 ÷ 20 = 7 or 7 × 20 = 140 1 2 3 4 5 6 7 **2 22 42 62 82 102 122**	B1 B1	May be implied by any of the following: • consistent position patterns + 20 indicated for at least 4 consecutive positions e.g. (2,) 20, 40, 60, 80, 100, 120 • sight of 22 for student 2 with no further working or entries CAO

8. Identifying 12 possible combinations	B1	Award B1 for convincing identification of the 12 combinations, for example: • simply stating 12 • (3 × 4 =) 12 • showing all combinations 1+1, 1+2, etc. • all 12 'totals' • (2,3,3,4,4,4,5,5,5,6,6,7) shown with no extras • completed sample space drawn (3 by 4).
Identifying the 3 correct combinations that give a score of 6 or more (**2** and **4**, **3** and **3**, **3** and **4**)	B1	**Strict FT** only if a list of all possible scores previously stated.
(Probability of '6 or more' =) $\frac{3}{12}$ or equivalent ISW (but note comment for M1 below)	B1	A fraction with a denominator of 12 implies the first B1. Unsupported $\frac{3}{12}$ or equivalent implies previous B1B1. Probability may be implied in later working (e.g. 60 ÷ 12 = 5, 5 × 3 = 15). FT if a clear numerator and denominator can be identified from previous work. e.g. Possible scores 2, 3, 4 ,5, 6, 7 (B0) 2 scores of 6 or more (B1 FT) Probability = $\frac{2}{6}$ (B1 FT)
(Number of winning scores =) $\frac{3}{12}$ × 60 or equivalent	M1	FT 'their $\frac{3}{12}$' If 'their $\frac{3}{12}$' incorrectly simplified and used then award B0 previously.
= 15	A1	Must not come from incorrect working. Award M1 A0 for a final answer of ($\frac{3}{12}$ =) $\frac{15}{60}$ Note: using 'a winning score of 6' instead of 'a winning score of 6 or more' can be awarded a maximum of B1B0B1M1A1.

8. Organisation and Communication.	OC1	For OC1, candidates will be expected to: • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanation and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means
Accuracy of writing.	W1	For W1, candidates will be expected to: • show all their working • make few, if any, errors in spelling, punctuation and grammar • use correct mathematical form in their working • use appropriate terminology, units, etc.

19.(b)	Use of $\frac{45}{9}$ or equivalent	M1	Sight of an appropriate 5 (or 40) implies M1.
	(£)40 AND (£)5	A1	Accept in either order.

19.(a)  		Diagram takes precedence. If 'notches/tallies' are used, penalise −1 once.
5 AND 18 in correct position.	B1	Award B0 for one of the following: • any other number written in the same section • 4 and 1 written for 5.
Total of 25 for *History*.	B1	FT 'their 7' + 'their 18', provided both sections are non-zero and no section is blank.
Overall total of 43	B1	FT 'their 13' + 'their 18'+ 'their 7' + 'their 5' provided all sections are non-zero and no section is blank. Note: The following answers are awarded  B1B0B0  B0B0B0
19.(b) $\frac{31}{43}$ or equivalent. ISW	B2	For B2 or B1, the numerator and denominator must both be whole numbers. For B2, accept: • 72·0(9…)% or 0·720(9…). • 72·1% or 0·721 • 72% or 0·72 from correct working. FT $\frac{\text{'their 13' + 'their 18'}}{43}$ provided neither section is blank. Award B1 for one of the following: • a numerator of 31 in a fraction < 1 • FT 'their 13' + 'their 18', provided neither section is blank, as a numerator in a fraction < 1 • a denominator of 43 in a fraction < 1. An answer of $\frac{31}{43}$ gains B2 regardless of 'their Venn diagram'. Penalise incorrect notation (e.g. '31 in 43') −1.

1(a) $\frac{3}{10}$	B2	Mark final answer B1 for $\frac{15}{50}$ or $\frac{30}{100}$
1(b) $20 \times 25 + 28 \times 15 + 17 \times 10$ (= 500 + 420 + 170)	M2	M1 for either • sight of the **sum** of any 2 unique appropriate products (not multiples of these products) or • for sight of 20×25, 28×15 and 17×10
(£) 1090	A2	CAO. Answer space takes precedence FT from M2 or M1 to award A1 for either • any 2 of 500, 420 and 170 in a correctly evaluated sum of 3 products or • sight of 500, 420 and 170 **<u>If no marks</u>**, • award SC1 for sight of (Saturday and Sunday interchanged) $17 \times 25 + 28 \times 15 + 20 \times 10$ **AND** EITHER SC2 for an answer of (£)1045 OR SC1 for one of the following: • any 2 of 425, 420 and 200 in a correctly evaluated sum of 3 products • sight of 425, 420 and 200 • award SC1 for sight of (table followed in order used in Venn) $20 \times 25 + 17 \times 15 + 28 \times 10$ **AND** EITHER SC2 for an answer of (£)1035 OR SC1 for one of the following: • any 2 of 500, 255 and 280 in a correctly evaluated sum of 3 products • sight of 500, 255 and 280

4(a) ($\frac{1}{5}$ is \$40, total amount of gift is) 40×5 or $40 \div \frac{1}{5}$		M1	Ignore \$ written as £ or €, etc
	($)200	A1	ISW
(Amount gifted to animal charity is ¼ × 200)	($)50	B1	FT ¼ × 'their 200' correctly evaluated, provided • 'their 200' ≠ 40 • 'their 200' ≠ 200 – 40 (= 160) Allow FT 'their 200' = 8 *(see note below)*
(Gift to medical research is) ($) 200 – 40 – 50		M1	FT 'their derived 200' – 40 – 'their 50', provided > 0
	($) 110	A1	FT provided both M marks previously awarded *If no marks, award SC1 for* *(40 – 1/5 × 40 – ¼ × 40 = 40 – 8 – 10 =) ($)22*

2(a) **Airport** / **Number of passengers (to the nearest million)** Cardiff — **2 000 000** Bristol — 9 000 000 Birmingham — **12 000 000** Exeter — **1 000 000** Leeds-Bradford — 4 000 000 Airport **Cardiff** Bristol ( ) **Birmingham** **Exeter** **Leeds-Bradford**	B1 B1 B1 B3	Answers in the table and pictogram take precedence. Accept the word million used eg 2 million Penalise -1 only for **consistent** use of incorrect place value for all 3 values. Award B3 for all 4 correct entries Award B2 for 3 correct entries Award B1 for 2 correct entries FT 'their values stated in the table' FT implied use of million (i.e. with incorrect place value given in the 1st table but then used as million in the pictogram) If a different symbol that is split into 4 is consistently used, then penalise -1 only. If a different scale used then B0.
2(b)(i) Yes and suitable reason given e.g. 'half of 80 million is 40 million (and 46 086089 is more than 40 million)' '46 million is more than 40 million (which is half of 80 million)' 'Double 46 million is 92 million (which is more than 80 million)' 'because half is 40000000 so Gatwick had more than half' 'because half of 80000000 is forty million (but Chris was correct because it was 46086089 which is more than half)' '46086089 million is more than half of eighty million (as 40000000 is half of it)' 'because 46086089 doubled is greater than 80000000'	E1	Allow yes and 'half of 80 is 40' Do not allow no with a suitable reason e.g. 'No, because half of 80 is 40 and Chris had 46 so he had extra people' 'No, because half of 80 million is 40 million and there was 46 million used in Gatwick'
2(b)(ii) 261 909	B1	
2(c) 2508 × 3 or 2508 + 2508 + 2508 or equivalent 7524 (litres)	M1 A1	For 2508 + 2508 + 2508, allow if no addition sign seen but addition is implied award M1.

(=) 1631 (seconds)	A1	
8.(a) 7000	B2	B1 for sight of 7200.
8.(b) 0·04 × (£)250 or equivalent (£) 10 ISW	M1 A1	
8.(c) 14 × 5 or equivalent (= 70) 70 ÷ 2 or equivalent = 35	M1 m1 A1	 FT 'their 14 × 5' ÷ 2 CAO
8.(c) Alternative method 1 *1/5 = 20% AND 10% = 7* *7 × 5* *= 35*	*B1* *M1* *A1*	 *FT 'their 7' provided 1/5 has been considered along with 50(%)* *CAO*
8(c) Alternative method 2 *14 × 2·5* = 35	*M2* A1	*May be seen in stages.* *e.g. 14 + 14 + 0·5 × 14* CAO

121	B1	
2.(a) 196	B1	Allow 14^2.
2.(b) 13	B1	
2.(c) $\frac{280 + 410}{2}$ (= $\frac{690}{2}$) OR $280 + \frac{410 - 280}{2}$ (= $280 + \frac{130}{2}$) OR $410 - \frac{410 - 280}{2}$ (= $410 - \frac{130}{2}$) OR writing numbers between 280 and 410 AND attempting to identify the middle number.	M1	May be seen in stages. Numbers could be multiples of 5 or 10. Do not accept multiples of 20.
345 (m)	A1	If no marks, award SC1 for: • an answer of 485 or 550 • sight of 345 but not as a final answer.
2.(c) W Accuracy of writing	W1	For W1, candidates will be expected to: • show all their working • make few, if any, errors in spelling, punctuation and grammar • use correct mathematical form in their working • use appropriate terminology, units, etc.

3.(c)(ii)	0	B1	
4.(a)	$\frac{55}{66}$ $\frac{35}{42}$	B2	B1 for either: • two correct answers circled, with one incorrect answer. • one correct answer circled, with up to one incorrect answer.
4.(b)	0·05	B1	Accept $\frac{1}{20}$. B0 for 1 ÷ 20.
4.(c)	3 6 AND 5 7 OR 5 7 AND 3 6	B2	B1 for an answer of either: • 3 7 AND 5 6

Unit 2: Intermediate Tier	Mark	Comments
4.		*Penalise incorrect units -1 only on first occurrence, by withholding A or B mark, not M marks*
(Number of kWh =) 138 × 39·5 × 1.02264 ÷ 3.6 (Cost of gas = Number of kWh) × 0(.)12	M1 m1	(= 1548.4474 kWh)
(£)185.76 to (£)185.82 or 18576(p) to 18582(p)	A1	(1548.4474 × 0.12 = £185.813688)
(Standing charge 30 × (0.)32 =) (£)9.6(0) or 960(p)	B1	CAO
(Total of gas and standing charge) *(£)195.36 to (£)195.42 or 19536(p) to 19542(p)	B1	FT 'their derived cost of gas' + 'their 30 × (0.)32' correctly evaluated, provided 'their derived cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh May be implied in later working
(Total including VAT =) 1.05 × 195(.)36 to 1.05 × 195(.)42	M1	FT 'their derived total cost of gas **+** 'their standing charge'
*(£)205.12 to (£)205.19(1) or 20512(p) to 20519(.1p)	A1	ISW further rounding, e.g. (£)205, (£)205.20 If final B0 B0 M0 A0, award SC1 for correctly evaluated final answer of 1.05 × 'derived cost of gas' having omitted the standing charge, provided 'their derived cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh *Allow answers in these ranges that may include unseen rounding or truncation from a previously written value*
4. Alternative method: Gas per day		*Penalise incorrect units -1 only on first occurrence, by withholding A or B mark, not M marks*
(Number of kWh =) 138 × 39·5 × 1.02264 ÷ 3.6 *(Number of kWh per day) ÷ 30* *(Cost of gas per day) × 0(.)12*	*M1* *m1* *m1*	*(= 1548.4474 kWh)* *(= 51.6149133…kWh)*
(Cost of gas per day =) (£)6.19(…) or 619(…p)	*A1*	*CAO*
(Total of gas and standing charge) *6.51(…) or 651.(…p)*	*B1*	*FT 'their derived cost of gas per day' + (0.)32 correctly evaluated* *May be implied in later working*
(Total including VAT =) *1.05 × 6.51(…) × 30*	*M1*	*(= 6.83(94…) × 30 or 6.84 × 30)* *FT 'their derived cost of gas per day **+** (0.)32, provided 'their derived cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh*
(£)205.12 to (£)205.19(1) *or 20512(p) to 20519(.1p)*	*A1*	*ISW further rounding, e.g. (£)205, (£)205.20* *If final B0 M0 A0, award SC1 for correctly evaluated final answer of 1.05 × 'derived cost of gas per day' × 30 having omitted the standing charge,* provided 'their cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh *Allow answers in these ranges that may include unseen rounding or truncation from a previously written value*

Unit 2: Foundation Tier	Mark	Comments
9.		*Penalise incorrect units -1 only on first occurrence, by withholding A or B mark, not M marks*
(Number of kWh =) 138 × 39·5 × 1.02264 ÷ 3.6 (Cost of gas = Number of kWh) × 0(.)12	M1 m1	(= 1548.4474 kWh)
(£)185.76 to (£)185.82 or 18576(p) to 18582(p)	A1	(1548.4474 × 0.12 = £185.813688)
(Standing charge 30 × (0.)32 =) (£)9.6(0) or 960(p)	B1	CAO
(Total of gas and standing charge) *(£)195.36 to (£)195.42 or 19536(p) to 19542(p)	B1	FT 'their derived cost of gas' + 'their 30 × (0.)32' correctly evaluated, provided 'their derived cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh May be implied in later working
(Total including VAT =) 1.05 × 195(.)36 to 1.05 × 195(.)42	M1	FT 'their derived total cost of gas **+** 'their standing charge'
*(£)205.12 to (£)205.19(1) or 20512(p) to 20519(.1p)	A1	ISW further rounding, e.g. (£)205, (£)205.20 If final B0 B0 M0 A0, award SC1 for correctly evaluated final answer of 1.05 × 'derived cost of gas' having omitted the standing charge, provided 'their derived cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh *Allow answers in these ranges that may include unseen rounding or truncation from a previously written value*
9. Alternative method: Gas per day		*Penalise incorrect units -1 only on first occurrence, by withholding A or B mark, not M marks*
(Number of kWh =) 138 × 39·5 × 1.02264 ÷ 3.6 *(Number of kWh per day) ÷ 30* *(Cost of gas per day) × 0(.)12*	*M1* *m1* *m1*	*(= 1548.4474 kWh)* *(= 51.6149133…kWh)*
(Cost of gas per day =) (£)6.19(…) or 619(...p)	*A1*	*CAO*
(Total of gas and standing charge) *6.51(…) or 651.(…p)*	*B1*	*FT 'their derived cost of gas per day' + (0.)32 correctly evaluated* *May be implied in later working*
(Total including VAT =) *1.05 × 6.51(…) × 30*	*M1*	*(= 6.83(94…) × 30 or 6.84 × 30)* *FT 'their derived cost of gas per day **+** (0.)32, provided 'their derived cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh*
(£)205.12 to (£)205.19(1) *or 20512(p) to 20519(.1p)*	*A1*	*ISW further rounding, e.g. (£)205, (£)205.20* *If final B0 M0 A0, award SC1 for correctly evaluated final answer of 1.05 × 'derived cost of gas per day' × 30 having omitted the standing charge,* provided 'their cost of gas' ≠ 'their 138 × 39·5 × 1.02264 ÷ 3.6' or 1548.4474 kWh *Allow answers in these ranges that may include unseen rounding or truncation from a previously written value*

18. Sight of $2x + 3y = 13$ AND $8x - 3y = 22$	B1	Award B1 for sight of $(2x + 3y) + (8x - 3y) = 13 + 22$. May be implied in later working.
Method to eliminate one variable e.g. (equal coefficients **AND)** appropriate intention to add or subtract or use a method of substitution.	M1	FT 'their equations' if of equivalent difficulty. If equating coefficients, allow one error in one term (not the term with equal coefficients). Sight of $10x = 35$ implies B1M1.
First variable found $x = 3{\cdot}5$ or $y = 2$ or equivalent	A1	CAO. Award A1 for $2x = 7$.
Second variable found	A1	FT substitution of their '1st variable' if M1 gained. Accept an answer rounded, truncated or as an improper fraction (if not whole number) on FT, provided > 0.
(Perimeter of triangle = 3·5 + 3·5 + 2 =) 9 (cm)	B1	FT 'their derived x and y', provided an algebraic method is used and both > 0. If the first B0 or B1 awarded, then award an additional SC1 for one of the following: • sight of x = 3·5 AND y = 2 (if M0 awarded) • an unsupported answer of 9 (cm).

4(a) 20 ≤ time in minutes < 30	B1	Allow e.g. '20 to 30' '20 – 30' '20 < time < 30' '20 ≤ time ≤ 30' '20 < time ≤ 30' '12 pupils for 20 to 30 minutes' (implies the group) '12 pupils in 20 – 30 minutes' (implies the group) '12 (pupils), 20 – 30 minutes' (2 answers side by side, mark the right-hand attempt) Sight of 20 and 30 with incorrect inequality signs, e.g. '20 ≤ 30' Do not accept, e.g. '12' '25' '20 – 30 minutes, 12 (pupils)', (as a choice of answers, mark the right-hand attempt)
4(b) 15	B1	
4(c) Unambiguously indicates 'Can't tell' with a reason, e.g. 'doesn't give the raw data (for the group 0 to 10 minutes)', 'only know (frequency) for the group 0 to (less than) 10 minutes' '5 pupils spent less than 10 minutes, but the diagram doesn't show if any of these spent no time' 'it doesn't tell you exactly how many minutes each pupil spent individually'	E1	Allow 'Can't tell' with a reason such as, e.g. 'grouped data', 'data is grouped' 'it is given in a range on the diagram' 'it doesn't show specifically' 'graph is not specific' 'it doesn't given an exact time' 'the graph gives 0 to 10 minutes making it impossible to get an accurate reading' 'could be 1 minute each or 5 minutes each we don't know' (examples all within the group 0 ≤ time < 10) 'doesn't give the data for 0 minutes' 'because the group is from greater than or <u>equal to</u> 0 minutes to less than 10 minutes' 'graph does not say they did or not' 'we can't see this on the diagram' 'does not give enough data' Do not accept reasons that imply 0 minutes is not included in the diagram Do not accept, 'Can't tell' e.g. 'the groups are an estimate' 'could be 5 minutes each or 20 minutes each we don't know' (examples not all within the required group) 'because the group is from <u>greater than</u> 0 minutes to less than 10 minutes' 'doesn't tell us how many people there are'

4(d) Unambiguously indicates 'No' with a reason, e.g. 'it is the same number (both 5 pupils) but different number of Year 9 asked to Year 10', 'the totals are different', 'Year 9 percentage is lower (than Year 10)' '5/34 is not the same (percentage) as 5/33' 'there are more pupils in Year 9 (than in Year 10)' 'there are fewer pupils in Year 10 (than Year 9)'	E1	Check diagram for totals If 'totals are different' is stated or clearly implied, ignore any incorrect totals or fractions given, provided the numerator of 5 pupils is correct Alllow 'No' with a reason, e.g. 'the difference is 1' OR Allow 'No' with sight of total 34 for Year 9 and 33 for Year 10 Do not accept, e.g. 'because the results are different' 'the difference is 2' 'there are more pupils in Year 10 (than in Year 9)', unless the correct totals are seen 'there are fewer Year 9 (than Year 10)', unless the correct totals are seen

NO, with sight of 1·7(70...) OR 0·56(4...)			*A1*	
6.	0·9(0)	90%	B4	B1 for each correct response.
$\frac{3}{20}$	0·15			

7.(a) $\frac{1}{2}$ or $\frac{180}{360}$ or 50% or equivalent	B1	ISW Allow (a) half BO for answer using words alone with no numerical value; e.g. 'even chance' alone.
7.(b) 2×45 90	M1 A1	FT from 45 ÷ 'their (a)'
7.(c) $\frac{60}{360}$ or $\frac{1}{6}$ or $\frac{15}{90}$ or equivalent	B2	ISW B1 for sight of 360° as a denominator.

7(a) 20 ≤ time in minutes < 30	B1	Allow e.g. '20 to 30' '20 – 30' '20 < time < 30' '20 ≤ time ≤ 30' '20 < time ≤ 30' '12 pupils for 20 to 30 minutes' (implies the group) '12 pupils in 20 – 30 minutes' (implies the group) '12 (pupils), 20 – 30 minutes' (2 answers side by side, mark the right-hand attempt) Sight of 20 and 30 with incorrect inequality signs, e.g. '20 ≤ 30' Do not accept, e.g. '12' '25' '20 – 30 minutes, 12 (pupils)', (as a choice of answers, mark the right-hand attempt)
7(b) 15	B1	

7(c) Unambiguously indicates 'Can't tell' with a reason, e.g. 'doesn't give the raw data (for the group 0 to 10 minutes)', 'only know (frequency) for the group 0 to (less than) 10 minutes' '5 pupils spent less than 10 minutes, but the diagram doesn't show if any of these spent no time' 'it doesn't tell you exactly how many minutes each pupil spent individually'	E1	Allow 'Can't tell' with a reason such as, e.g. 'grouped data', 'data is grouped' 'it is given in a range on the diagram' 'it doesn't show specifically' 'graph is not specific' 'it doesn't given an exact time' 'the graph gives 0 to 10 minutes making it impossible to get an accurate reading' 'could be 1 minute each or 5 minutes each we don't know' (examples all within the group $0 \leq$ time < 10) 'doesn't give the data for 0 minutes' 'because the group is from greater than or equal to 0 minutes to less than 10 minutes' 'graph does not say they did or not' 'we can't see this on the diagram' 'does not give enough data' Do not accept reasons that imply 0 minutes is not included in the diagram Do not accept, 'Can't tell' e.g. 'the groups are an estimate' 'could be 5 minutes each or 20 minutes each we don't know' (examples not all within the required group) 'because the group is from greater than 0 minutes to less than 10 minutes' 'doesn't tell us how many people there are'
7(d) Unambiguously indicates 'No' with a reason, e.g. 'it is the same number (both 5 pupils) but different number of Year 9 asked to Year 10', 'the totals are different', 'Year 9 percentage is lower (than Year 10)' '5/34 is not the same (percentage) as 5/33' 'there are more pupils in Year 9 (than in Year 10)' 'there are fewer pupils in Year 10 (than Year 9)'	E1	Check diagram for totals If 'totals are different' is stated or clearly implied, ignore any incorrect totals or fractions given, provided the numerator of 5 pupils is correct Alllow 'No' with a reason, e.g. 'the difference is 1' OR Allow 'No' with sight of total 34 for Year 9 and 33 for Year 10 Do not accept, e.g. 'because the results are different' 'the difference is 2' 'there are more pupils in Year 10 (than in Year 9)', unless the correct totals are seen 'there are fewer Year 9 (than Year 10)', unless the correct totals are seen

		tins with 3, or their area with 4.8(m^2) is given
11. (Electricity cost is) 654 × (£)0.30 (£)196.2(0) or 19620(p) (Cost of electricity and standing charge is £196.20 + 54 =) (£) 250.2(0) (Total bill including VAT) 1.05 × 250.2(0) or 250.2(0) + 12.51 (£)262.71	 M1 A1 B1 M1 A1	<u>Incorrect unit of money is penalised -1 once only on the first occurrence, by withholding an A or B mark</u> Accept 654 × 30(p) If units are given they must be correct Accept £196.20p FT provided 654 used in a calculation for 'their cost of electricity' Do not accept if embedded with an incorrect interpretation of the standing charge, e.g. 196.20 + 3 × 54 = (£)358.20 is B0 If previous M0 A0 B0 for (654 × (£)0.30 × 3 =) £588.60 AND (588.60 + 54 × 3 = 588.60 + 162 =) £750.60, award SC1 for this consistent misunderstanding and then FT FT from 'their derived total of electricity' + 'their standing charge', accept rounding or truncation to a penny Allow M1 A0 for 1.05 × 'their total rounded or truncated to a whole pound' If M0 A0 for inclusive of VAT cost, allow SC1 for an answer of (£)262.70, provided not from incorrect working (allow from 250.20 + 12.50) If final B0 M0 A0, award SC1 for the correct evaluation of 1.05 × 'their derived cost of electricity' having not considered and omitted the standing charge, or previously subtracted the standing charge from 'their cost of electricity'

End of solutions